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Lawsuit Produces Files From Bush's Science Council

Did D. Allan Bromley, Science Advisor to President Bush, fear that reporters were peeking at sensitive papers during public sessions of the President's Council of Advisors on Science and Technology (PCAST)?

Did Bernadine Healy, Director of NIH, declare a Bethesda independence movement, telling Bromley and PCAST that NIH was too big to be subordinate to the Department of Health and Human Services and should be freestanding like NSF and NASA?

And was a senior appointment to the White House Office of Science and Technology Policy (OSTP) assisted by Director Bromley's assurance to Presidential Chief of Staff John Sununu that the candidate "is a good Republican"?

In all three cases, the answer is yes, according to newly released PCAST files of the Bush era, as recent as it was. The papers came out by judicial edict on February 17 after the Clinton Administration, which inherited the court case,

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decided to settle a longstanding freedom-of-information suit pending against PCAST. The suit, charging PCAST with violations of the openness provisions of the Federal Advisory Committee Act, was initiated last year by the Bureau of National Affairs, a major Washington newsletter publisher, and was joined by SGR and later by *Science* magazine.

During the Bush Administration, the Justice Department, representing PCAST, fought the allegations. But three weeks after Clinton's inauguration, the government's attorney in the case advised the plaintiffs that "The new administration has decided to waive any discovery privileges and/or exemptions" under the so-called sunshine laws. The parties to the case then agreed to a stipulation stating that "PCAST has improperly closed meetings in violation of Section 10 of the Federal Advisory Committee Act."

The government agreed to pay \$6000 in plaintiffs' attorneys' fees, and to "make available to plaintiffs all records, reports, drafts, working papers, minutes, appendixes, studies, agenda, and other documents made available to or prepared by or for PCAST." The agreement yielded two hefty cartons of files, mostly agendas and background materials for the monthly meetings of the 12-member Council, an

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Clinton Unveils Program For Industrial Technology

From agriculture to defense, the Clinton Administration left little untouched last week in government R&D policy as it fleshed out campaign promises of a large-scale mobilization of federal money and resources in support of commercial technology.

A policy paper bearing the name of the President and Vice President, *Technology for America's Growth: A New Direction to Build Economic Strength*, likened the shift to a previous, profound turning point in the relationship between the US government and the nation's scientific enterprise:

"President Eisenhower undertook a similar policy change in 1954," the Clinton-Gore paper stated, "when he issued

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In Brief

"Congress is sensitive to ... contacts between US universities and foreign companies," the NSF Office of Legislative and Public Affairs observes in its latest *Congressional Report*, an internal NSF publication on sentiments and activities affecting the Foundation. The report adds: "Congress is particularly concerned where federally funded research is involved. Not surprisingly, foreign access to US universities and federally funded [research] will likely be an issue during the NSF reauthorization process." The NSF statute expires this year and hearings on renewal will take place soon.

The old-boy tradition remains entrenched at the National Academy of Engineering. The latest election brought in 69 men and 4 women, raising the membership totals to 1657 men and 27 women. The National Academy of Sciences is only slightly less retrograde. The NAS count after its most recent election stood at 1581 men and 70 women.

The Super Collider lives on, despite a new report of cost overruns from the General Accounting Office and a damning assessment by the Congressional Budget Office, whose latest deficit-cutting report (see "R&D Plans," P. 4) says that "the share and the absolute amount of federal funds devoted to this project are out of proportion to the likelihood of the SSC's producing usable science or technology in the near future."

Discussing the Clinton technology policy at a press conference Feb. 23, Bowman Cutter, Deputy Assistant to the President for Economic Policy, said "We'll look back on this 10 years from now as the Gibbons technology shift"—a reference to Clinton's Science Advisor.

... NIH Needs Independence, Healy Told Council

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assemblage of science and technology statesmen (plus an occasional woman), drawn from academe and industry.

Virtually all of the long-withheld stuff could have been broadcast to the world without evoking serious interest, as was the response, in fact, when several PCAST position papers were published in the closing days of the Bush Administration [SGR, January 15]. Indicative of the bloated self-importance of PCAST operations are drafts of innocuous statements on inconsequential matters conspicuously stamped "Sensitive Close Hold"—a bureaucratic evasion of statutory limits on secrecy classifications.

But here and there, especially in internal memos and in the minutes of closed portions of PCAST sessions, piquant items are to be found, though the truncated paraphrasing standard in minute writing warrants uncertainty about accuracy and nuances. In all cases, however, Bromley signed the minutes.

In a talk to the November 12-13, 1992, PCAST meeting, according to the minutes, Healy presented a rationale for her efforts—futile to this day—to put a strategic plan into effect for NIH. The minutes on this subject are as follows:

"Dr. Healy stated that the NIH strategic plan was largely a framework for the agency to continue to fund scientifically meritorious investigator-initiated research. However, for the plan to be both comprehensive and successful, the agency would need to be able to control three things: 1) administrative structure, 2) budget, and 3) appointed personnel. Dr. Healy indicated that the NIH currently had no control over any of those three items, and that it needs to be able to act like a quasi-independent agency that is able to set independent priorities. She said that the NIH should be more like the NSF or NASA and the \$10 billion budget of the NIH meant that the NIH was too large to remain under the aegis of the Department of Health and Human Services."

This was not a viewpoint that Healy stated in public or presented to the Department, which regarded her strategic plan as a budget-busting ploy that would glorify Healy but embarrass the financially pressed White House.

The minutes of the Healy session then state, "Dr. Bromley asked what would happen if the Department of Health and Human Services were to delay debate of the NIH strategic plan to some point after the close of the Bush administration"—which had gone down to defeat in the previous week.

"Dr. Healy responded," the minutes report, "that the NIH would have to start all over again, but stated that the plan was such a politically attractive document that it would be foolish for any administration to delay its release."

Earlier in her appearance before the Council, the minutes report, Healy complained that "NIH does not have an effective tie-in with the Nation's economy. She stated that while the NIH may have had no role in the Nation's economy 30 years ago, today it could play a large role because of the

importance of biotechnology and pharmaceuticals."

Minutes of the closed meeting of April 2, 1992, state that "Dr. Bromley mentioned that he recently had a meeting with some private industry manufacturing experts. He asked them about the FY 1994 manufacturing initiative [under consideration by the Bush Administration to provide government assistance for industry].... He said that most of the responses were quite disappointing. He noted that one of the responses said that if the Federal government was willing to provide funding on the order of the Apollo program, then maybe something useful could be done."

The minutes then report that a PCAST member, Ralph Gomory, President of the Sloan Foundation and formerly a Vice President of IBM, "said it was crucial to develop more manufacturing expertise within the Federal government. He said that private industry must be involved jointly throughout the entire development of the manufacturing initiative if the program is to succeed.... The mission belongs in the Department of Commerce, but Commerce currently does not have the expertise," Gomory said, according to the minutes.

The discussion was joined by Solomon Buchsbaum, Senior Vice President, Technology Systems, AT&T Bell Laboratories. "Dr. Buchsbaum," the minutes report, "noted that one problem is the animosity between government and private industry. He said that in Japan and Germany, industry and government work together as partners."

This brought a response from Mary Good, Senior Vice President, Research and Technology, Allied-Signal, Inc. The minutes report: "Dr. Good said this is the mission of the Department of Commerce. She said we need to make it work or get rid of the Department. To make it work, the President will have to get rid of the problems related to conflict of interest. Bright young people are not willing to sacrifice their future private career to work for the government. The only people who are willing to work are those who are retiring."

In response to Bromley's request in May 1991 for "members to draft memoranda to the President on selected issues on behalf of the entire Council," Gomory composed

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... Bromley Endorses "Good Republican" for Staff

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a paper on R&D megaprojects, including a blast against the Space Station. Arguing that the Station "can make at best a minor scientific contribution," the Gomory statement continued: "While in the past Megaprojects were affordable, and their out-year growth could be dealt with in expanding budgets, this is no longer the case in this time of limited budgets. PCAST is concerned that the impact is and will be felt on what has historically been the most productive component, the individual investigator."

The files do not indicate whether George Bush saw the Gomory memo.

Bromley's schedule of topics to be discussed at a closed meeting early in the Bush Administration included a cryptic item: "I have been asked by the US intelligence community for the 10 most important science and technology intelligence needs. The intelligence people will then go to work on the topics selected.

"My OSTP staff is contributing candidate topics. I would appreciate it if you would do the same.

"To illustrate: The PCAST Panel on National Security and Technology may need to know the Soviet view of technology in the Iraqi war ... and Soviet plans based on that view." [original ellipsis.]

The outcome of that request did not show up in the released files.

In November 1991, Bromley proposed the nomination of Karl Erb as Assistant Director of OSTP for Physical Sciences and Engineering, a Presidential appointment. In a memo to Sununu, who zealously screened appointments for Bush, Bromley noted that he and Erb had been colleagues in the Yale Physics Department and that Erb had served at NSF and on the OSTP staff for two years, to which Bromley added: "Quite apart from his scientific credentials Karl has outstanding characteristics, is a good Republican, and a stout supporter of the Bush Administration."

Erb passed muster, but very likely would have done so without the political reference. Donald A. Henderson, another Associate Director at OSTP, says that when invited by Bromley to join the staff, he replied that he's a Democrat and that his wife is active in family-planning activities. He said Bromley answered that it didn't matter, and it didn't.

And then there's an item on one of Bromley's PCAST meeting schedules. As a 15-minute break is announced, it tells him: "Please ask that the briefing books and Presidential memo be collected. They will be returned at tomorrow's closed session. This will prevent a briefing book from inadvertently being allowed to be viewed by the press at open session."

Do reporters peek at official papers to which they are not entitled? Practices vary, but some of the best in the business do assiduously cultivate the skill of reading text upside down.

Finally, why did the Clinton Administration release this

New Attack on R&D "Pork"

A series of "high-profile hearings and a survey of colleges and universities that accept unauthorized earmarks" have been pledged by Chairman George Brown (D-California) of the House Science, Space, and Technology Committee in his newest assault on pork-barrel funding of academic R&D projects.

In preparation for the hearings, Brown announced last month at the annual meeting of the American Association for the Advancement of Science, he has asked 50 academic recipients of pork to report "in detail how the money is spent." Brown accompanied his announcement with a list of the 50 and the amounts received—a total of \$225 million.

Academic officials as well as lobbyists will be asked to testify, he said.

heap of paper after the Bush Administration had dug in and resisted compliance with the "sunshine laws"?

The case was headed for trial after the US District Court ruled against a Justice Department motion for dismissal. The Justice Department, in some disarray pending the long-delayed arrival of Clinton's Attorney General, probably doesn't look on PCAST's infantile fascination with secrecy as worthy of serious legalistic strife. Furthermore, the government was likely to lose the case, thus setting a precedent for White House advisory meetings on the PCAST style.

It's not known whether Clinton's science team was consulted on the stipulation releasing the papers. If it agreed to throw in the towel, that may be a signal that there will be no PCAST or equivalent in the Clinton White House. Asked about that last week at his first press conference, Presidential Science Advisor John Gibbons was non-committal. Noting Clinton's interest in "streamlining of government," Gibbons said the future of PCAST was "under consideration."

Clinton has not manifested zest for openness in government. A Clinton campaign statement on technology policy issued in September [SGR, October 15] states that "some provisions of the Federal Advisory Committee Act and the Freedom of Information Act prompt premature disclosure of information that is essential to US long-term competitiveness by forcing open meetings and giving foreign competitors access to sensitive material."

The statement, a hurried product of the election campaign, is in the context of government relations with industry, and is not exactly on point with PCAST operations. But the statement was not balanced by an expression of appreciation for the benefits of the sunshine laws.

In any case, a peek at the vacuous proceedings of that august body of elders of science policy does enlist sympathy for Clinton's edict to slash government advisory committees.—DSG

... Military-Civilian R&D to Move to 50-50 Balance

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an executive order directing federal agencies to support basic research. This new policy will result in significantly more federal R&D going to (pre-competitive) projects of commercial relevance. It will also result in federal programs that go beyond R&D, where appropriate, to promote the broad application of new technology and know-how."

The Clinton-Gore policy concentrates on the government's big research spenders. The major exception is the National Institutes of Health. NIH goes virtually without mention in the great revamping that Clinton and company have proposed to Congress or have already carried out in cases where Presidential authority alone is sufficient.

In response to a question, Presidential Science Advisor John Gibbons told a press conference on February 23 that he had discussed NIH matters that morning with Secretary Donna Shalala of the Department of Health and Human Services. "I can't tell you how it will work out," he said.

Firm plans, however, were announced for all other major R&D agencies. In a quick change that is both symbolic and tangible, the new Administration refashioned the Pentagon's Defense Advanced Research Projects Agency (DARPA) into a dual military-civilian bankroll for research by deleting "Defense" from the title of the \$1.4-billion agency. Though remaining in the Pentagon, it is henceforth to be known as ARPA. Ironically, that's the title it had until 1972, when "Defense" was added to ward off pressures for supporting purely civilian projects.

As part of the shift toward commercial research, the Clinton-Gore policy statement says, the balance between civilian and military research will swing back to about 50-50, the ratio that prevailed before the Cold War pushed the military share up to a peak of 75 percent in the mid-1980s. It's been declining since, but still stands at about 60 percent of all federal R&D spending.

In other moves toward commercial R&D, the Administration asked Congress to restore \$207 million that the deficit-wary legislators apologetically cut out of the National Science Foundation budget last year—with \$112 million of the requested money earmarked for research on advanced manufacturing, biotechnology, materials research, high-performance computing, and global change. If the money is restored, NSF, the patron of university-based fundamental science, plans to spend only \$85 million of it on basic research.

The Administration also asked for an additional \$103 million this year for the National Institute of Standards and Technology's Advanced Technology Program (ATP), which subsidizes high-tech research by industrial consortia. The ATP is budgeted this year for \$68 million, but says it has worthy applications many times that sum. Its parent agency, NIST, now budgeted at about \$385 million in federal funds (plus fees from industry and government agencies), would quadruple its government spending over the next four years

R&D Plans: To Order Copies

Details of the Clinton Administration's industrial technology program are contained in two publications issued by the White House, both available as indicated:

Technology for America's Economic Growth: A New Direction to Build Economic Strength (36 pp., no charge), order from: Office of Science and Technology Policy, 744 Jackson Place NW, Washington, DC 20506; tel. 202/395-5101.

A Vision of Change for America (ISBN 0-16-041662-0; 145 pp., \$7.50), order from: US Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9328; tel. 202/783-3238; also available from local GPO bookstores.

And from the Congressional Budget Office, a new examination of where the federal money goes, along with options for cutting programs, including R&D:

Reducing the Deficit: Spending and Revenue Options: A Report to the Senate and House Committees on the Budget (423 pp., no charge), order from: Congressional Budget Office, Publications, 2d and D Sts. SW, Washington, DC 20515; tel. 202/226-2809.

under the Clinton plan. Comfortable in its historic role of collaborating with industry, NIST may well be the Cinderella agency of the Clinton era.

Meanwhile, the Department of Energy's laboratories would receive an additional \$30 million next year to finance Cooperative Research and Development Agreements (CRADAs) with industry. Thereafter, the figure would be \$50 million per year through 1997. The present funding for CRADAs is merely \$9 million.

Competitive grants under the Department of Agriculture's National Research Initiative are also slated for growth. In the words of another of the Administration's budget and policy publications, *A Vision of Change for America*, the rationale is that "Top flight R&D is needed to assure the continued competitiveness of US agricultural products in global trade...." With the ag initiative now funded at about \$100 million a year, the Clinton-Gore plan calls for increasing the research outlays by \$180 million over the next four years, a sum that will finance 500 more projects per year, according to the White House planners.

And all laboratories of NASA and the Departments of Defense and Energy "that can make a productive contribution to the civilian economy will be reviewed with the aim of devoting at least 10-20 percent of their budgets to R&D partnerships with industry."

According to an analysis by the House Science, Space, and Technology Committee, \$521 million in "new" money for science and technology would be made available quickly

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... Clinton Program Boldly Expands Existing Policies

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as part of the Administration's economic "stimulus" package. From 1994-97, \$12 billion in new funds for research-related activities were identified by the Committee as part of the President's \$100-billion "investment" program.

Prudence calls for putting little stock in the numbers at this stage of the Clinton program. The budgets must be approved by a Congress whose fealty to the new President is by no means certain. With 1994 Congressional elections already figuring in political calculations, the members are insisting on cuts before increases.

What is important in the R&D arena, however, are not the numbers but the tides on which the Clinton program will move. Starting under Ronald Reagan—whose Administration created SEMATECH, an industrial-research consortium blessed in the Clinton plan—the US government has been steadily moving into support of commercial research.

The main push for government programs focused on industrial R&D came from Congressional Democrats, led by Senator Ernest Hollings, of South Carolina, Chairman of the Commerce, Science, and Transportation Committee, and Rep. George Brown, of California, long active on the Science, Space, and Technology Committee, and Chairman since 1991.

When it came to government support of industrial R&D programs, Reagan could both do it and deny it at the same time, ridiculing "industrial policy" while carrying it out in small doses under semantic cover of "precompetitive, generic research."

It was Reagan who decreed an open door at government labs for industrial firms. Few companies have bothered to examine the opportunities that exist there, and the federal labs have not made it easy for many of the firms that have tried. But the policy shift, though ineffective, did occur under Reagan.

After a cautious start, Bush picked up the theme of government-industry high-tech collaboration, and he actually went to bat last year for NIST and its Advanced Technology Program when Congressional support was drooping. Toward the end of his term, under badgering from the industry-dominated Council on Competitiveness, Bush was no longer a barrier to an expansion of government support for industry. In the works as he left office was an ambitious program—prestigiously designated a Presidential Initiative—of research on advanced manufacturing techniques.

Very few items in the Clinton technology plan are actually new. Some, like the Advanced Technology Program and Cooperative Research and Development Agreements, were sprouting under Bush; others, like the manufacturing-research program, were gestating. The difference is that Clinton has enthusiastically embraced a major government role in support of industrial R&D and has proposed major shifts of existing budgets and increases to finance his designs.

Key Points in Clinton Plan

Highlights from recent briefings and statements on the Clinton Administration's science and technology policy:

- The Space Station and the Superconducting Super Collider will be continued but their schedules will be extended to scale down the Station and to allow more time for the quest for foreign partners for the SSC.
- To increase support for academic research, indirect-cost payments will be reduced "to shift national spending from overhead to funding research." Expected "savings:" \$1.2 billion over four years.
- The Administration will strongly oppose R&D pork-barrel appropriations. The Department of Agriculture Cooperative State Research Service Buildings and Facilities Account was described as "a main example of Congressional earmarking of scarce federal research dollars."
- The future of the President's Council of Advisors on Science and Technology has not been decided, but Presidential Science Advisor Gibbons sounded doubtful about its continuation.
- High-performance computing and electronic "highways," projects closely identified with Vice President Al Gore, will receive high priorities.
- Though Gore holds a prominent role in the Administration's high-tech planning, nothing along the lines of "czar" status suggested during the campaign has emerged so far.

For the old beneficiaries of the federal research system, academic and government basic scientists, the new Administration offered some words of assurance—but relatively few compared to those devoted to industrial technology.

Stating, "It is essential to recognize that technical advances depend on basic research in science, mathematics, and engineering," the Clinton-Gore policy paper pledges: "This administration will both ensure that support for basic science remains strong, and that stable funding is provided for projects that require continuity. We will not allow shortterm fluctuations in funding levels to destroy critical research teams that have taken years to assemble."

Then it adds: "But stable funding requires setting clear priorities. In recent years, rather than canceling less important projects when research budgets have been tight, Federal agencies have tended to spread the pain, resulting in disruptive cuts and associated delays in hundreds of programs. We will improve management of basic science to ensure that high-priority programs receive sustained support."

Projects that require continuity? Priorities? Improved management? The policy paper does not say how these prickly matters will be decided.—DSG

NSF Director Tells of the Offer He Couldn't Refuse

Excerpts from a conversation February 12 between science reporters and Walter Massey, Director of the National Science Foundation (soon to leave for a vice presidency of the University of California), and James Duderstadt, Chairman of the National Science Board (NSF's board of directors) and President of the University of Michigan.

Q. *How is NSF affected by Clinton's orders for all federal agencies to scale down administrative spending and cut back on advisory committees?*

Massey. We're a small agency, and many of these savings are directed toward the big agencies.... We often get caught in things that are not really designed for us, and we have to try to work with OMB [Office of Management and Budget] to show them that, in fact, it might not be applicable to us.... We've had to put a severe restriction on hiring, almost a freeze. Cut back on travel a great deal. We've cut down the number of meetings of advisory committees.

Q. *How will this affect peer review?*

Massey. Some of the committees are the committees that we use ... to carry out the review process. We haven't had time to go through all of this.

Q. *Has the new Administration got down to the level of talking to NSF?*

Duderstadt. We've had a dialog with Jack Gibbons [Clinton's Science Advisor and Director of the Office of Science and Technology Policy]. Obviously, they're trying to think out their whole structure as well. Will there be a continuation of PCAST [President's Council of Advisors for Science and Technology] or something to replace it?...

Q. *Has Gibbons or anybody else indicated a preference about direction or priorities for NSF?*

Duderstadt. Not with the Board in detail. In other words, I think that they understand many of the fundamental recommendations of the Commission [on the Future of the National Science Foundation, which reported to the Board last year, recommending, among other things, a broader science-policy role for the Board]. They do accept the process we're moving into to evaluate the role of the Board and whether the Board really should expand somewhat beyond its traditional role of simply being directors of the National Science Foundation, and are very interested in listening to that process....

Q. *Dr. Massey, last year at about this time, you were asked about reports that universities were courting you, and you said you had signed on for six years, had just arrived, and really had no interest in leaving NSF [SGR, February 1, 1992]. What happened over the past year to change your mind?*

Massey. It really wasn't over the past year. This offer [from the University of California] came very quickly. I was approached in January, as a matter of fact. It's something that is just too good for me to turn down. These things come

when they come. So, I haven't been planning to leave, and there was nothing in the [White House] transition that prompted this. It was the opening at the University of California. I'm rather sorry that it came—I'm not sorry that I have this offer—right now. Because I feel that we're in a very good position at the Foundation to implement a number of the things that I have been pushing....

Q. *Specifically.*

Massey. [The Clinton Administration wants] to put a lot of emphasis on human resources and education. That's first. As you know, we have been taking the lead in many areas in working in that way. They called for having science and technology play a more visible role in national needs, areas of national concern. As you know, that's one of the issues I raised when we appointed the Commission. They want to stress ... a better utilization of federal resources. And our idea of working closer together with other agencies certainly fits into that category....

Duderstadt. I think in a broader sense, we believe that they also understand that the Foundation is the most natural connection to the great resources offered by America's research universities. Indeed, the Foundation can play an interface role with other parts of Washington—Department of Education, DoD, DOE....

Q. *As a result of this, do you foresee a change in priorities at the Foundation?*

Massey. If I had stayed, I would urge along the lines that the Commission recommended, that we make sure we shore up and maintain the base in supporting the research—curiosity-driven research. That we look more carefully at a balance between supporting research ideas that come in and strategic research areas—still individual investigators—and basic research, but those that are coupled with national goals. And it's not so much a matter of increasing support for education, but integrating our support for education more fully within our support for research activities.... [NSF has] to be prepared to make the case that if there are going to be new resources coming from defense spending ... that this is the place to invest them....

Q. *In your discussion with Jack Gibbons, did he ask the Science Foundation for sacrifices, the way the President has asked the business community for sacrifices?*

Massey. We didn't go into that at all.... We talked more about my timing and ... and what I saw as some of the issues that he should be thinking about....

Q. *What did you recommend that he should think about?*

Massey. Just the things we've been talking about. The role of the Foundation in the Administration's plans and programs. I said to him I hoped that the strengths of the Foundation and its ability to do things would be brought to the attention of the highest level. With so many new people coming into town, we can't take for granted that everyone will really understand what the Foundation does and what it can do. So, that was a major item of conversation....

More IN PRINT: Canadian Research, Aerospace Data

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Investing in Canada's Health: A Strategic Plan for the Medical Research Council of Canada (34 pp., no charge, only single copies available), properly brief, platitudinous, and vague, as any sensible strategic plan for a research agency should be, this Canadian production is actually off the press. In contrast, its behemoth American counterpart, tortuously assembled by the National Institutes of Health on the command of Director Bernadine Healy, long ago vanished into the Department of Health and Human Services, and remained unaccounted for when the Bush team departed.

Like the Healy version, the Canadian plan involved a cast of thousands: "At least 3000 health science researchers and others participated in more than 200 self-managed discussion groups," according to the MRC, a 22-member, government-appointed body that advises the Minister of Health and Welfare on the distribution of some \$250 million annually for research and training. Among the objectives in the MRC strategic plan: "Evaluating all programs, with the possibility of rationalization or elimination as well as expansion and the development of areas ripe for innovation."

Order from: Medical Research Council of Canada, Communications Department, Holland Cross, Tower B, 5th Floor, 1600 Scott Street, Ottawa, Ontario, Canada K1A 0W9; tel. 613/954-1958; fax 613/954-1800.

Aerospace: Facts and Figures 1992-1993 (176 pp., \$25, plus \$4 for shipping in US and Canada; \$7 elsewhere; in District of Columbia, add 6-percent sales tax), from the Aerospace Industries Association, statistics on aerospace expenditures, employment, sales, passenger and cargo traffic, space launches, federal agency programs and budgets. There's also a section on projects and costs in the Strategic Defense Initiative from 1989-93.

Order from: Aerospace Industries Association, attn. Aerospace Research Center, 1250 Eye Street NW, Washington, DC 20005; tel. 202/371-8561.

Government Research Directory 1992-93 (1252 pp., \$405), 7th edition, from Gale Research, Inc., lists nearly 4000 US and Canadian government research organizations, from individual laboratories to national agencies, in science, technology, and health. Included are names of senior personnel, addresses and telecommunication numbers, plus data on programs, library facilities, publications, etc.

Also from Gale, published by Longman Group UK: **European Research Centers** (572 pp., \$630), 9th edition, provides coverage as above for over 12,000 government, academic, and industrial research organizations throughout Europe.

Order from: Gale Research Inc., PO Box 33477, Detroit, Michigan 48232-5477; tel. 1-800/877-GALE; fax 313/961-6083.

Protecting Visibility in National Parks and Wilderness

Areas due later this month from the National Academy of Sciences (about 315 pp., tentatively priced at \$38), says little has been accomplished toward the 1977 Congressional directive to protect visibility in the parks and wilderness areas. Emphasis on local sources of pollution are misguided, the report states, because most sources of visibility reduction are regional in origin and result "from the transport by winds of emissions and secondary airborne particles over great distances (typically hundreds of miles)." Departing from the customary formula, the report states that "the need for additional research does not imply that further regulatory action ... would be premature." The report committee was chaired by Robert A. Duce, Dean of the College of Geosciences and Maritime Studies, Texas A&M University.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 1-800/624-6242 or 202/334-3313.

Cancer Facts and Figures—1993 (30 pp., no charge), annual report by the American Cancer Society (ACS), reports state-by-state trends in cancer incidence and mortality, survival rates, ACS budgets for research and education, etc.

Order from: American Cancer Society, 1599 Clifton Rd. NE, Atlanta, Georgia 30329-4251; tel. 1-800/ACS-2345; also available from local ACS divisions.

Correction

Bruce Alberts, incoming President of the National Academy of Sciences, is a Professor at the University of California, San Francisco, not Berkeley, as stated in SGR Feb. 15.

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In PRINT: Science Advice, Tobacco and Trade, Etc.

The publications listed are obtainable as indicated—not from SGR.

Facing Toward Governments: Nongovernmental Organizations and Scientific and Technical Advice (113 pp., no charge), behind the opaque title is a call for numerous non-profit scholarly, professional and policy-minded non-government organizations (NGOs) to spruce up their efforts to advise and influence government on S&T issues. The report, by the Carnegie Commission on Science, Technology, and Government, addresses a mixed bag, including the National Academy of Sciences, the American Association for the Advancement of Science, RAND, the Heritage Foundation, Sigma Xi, the Sierra Club, plus another 80 or so organizations, though the boundaries for inclusion are conceded to be "fuzzy."

With aggregate spending that approaches \$1 billion a year, the report says, these NGOs possess talent and resources "for enhancing and mediating interactions between science and technology and government." Among the recommendations: Collaboration by the NGOs "to advance the craft of policy analysis and design," commitment to education as the "clear and pressing" mission for the 1990s, and expansion of Congressional and other public-policy internship programs for scientists and engineers.

There's also a suggestion that *Science* magazine periodically publish "annotated listings" of NGO policy reports, which often come and go without notice—justifiably, in many instances. And then there's a call to firm up the finances of the National Academy of Sciences, possibly through a fee system for its services, to free the Academy staff from "an actively entrepreneurial mode of operation"—i.e., hustling for contracts. Drafting of the report is credited to William D. Carey, former Executive Officer of the AAAS, and Jesse Ausubel, the Commission's Director of Studies.

Order from: Carnegie Commission on Science, Technology, and Government, 10 Waverly Place, New York, NY 10003; tel. 212/998-2150; fax 212/995-3181.

International Trade: Advertising and Promoting US Cigarettes in Selected Asian Countries (GAO/GGD-93-38; 82 pp., no charge), by the General Accounting Office (GAO), Congressional research agency, reviews the sales push by American tobacco firms in Japan, Taiwan, South Korea, Thailand, Hong Kong, Malaysia, and Indonesia, noting that US government trade policy promotes cigarette sales abroad while federal health agencies campaign against smoking at home.

The GAO reports that several of the Asian governments accused American firms of violating restrictions on cigarette advertising, including the Thai government, which "said that US cigarette companies continue to violate the country's complete ban on cigarette advertising and promotional sponsorships." Analyzing the contents of the ads, the

GAO said they played on "American or western culture, relaxation and leisure, or fashionable life styles." (Foreign tobacco sales were vigorously supported by the Bush Administration as purely a trade issue; the Clinton Administration has not spoken on the subject).

Still available, a related report issued by the GAO in 1990: *Trade and Health Issues: Dichotomy Between US Tobacco Export Policy and Antismoking Initiatives* (GAO/NSIAD-90-190).

Also from the GAO: *NASA Program Costs: Space Missions Require Substantially More Funding Than Initially Estimated* (GAO/NSIAD-93-97; 21 pp.), reviews NASA projects over the previous 15 years and reports that most soared far beyond the initial cost estimates. For example, the starting price for the Hubble Space Telescope, not including mission operations and data analysis, was \$617 million; "current estimate"—\$1.682 billion. The median change in the projects studied, the GAO reports, was a 77-percent increase.

Order from: USGAO, PO Box 6015, Gaithersburg, Md. 20884-6015; tel. 202/512-6000; fax 301/258-4066.

Los Alamos Science: The Human Genome Project (338 pp., no charge), a beautifully illustrated volume, latest in a series of yearly or so book-length reports on research at the Los Alamos National Laboratory. This one, with contributions by staff members at the Los Alamos Center for Human Genome Studies, wavers between dense professional prose and material accessible to laymen. Articles cover the history and goals of the genome project, the technology employed in the research, ethical concerns, etc. Included are the text of discussions among various genome researchers.

Order from: Los Alamos Science, Mail Stop M708, attn. Nadine Shea, Managing Editor, Los Alamos National Laboratory, Los Alamos, New Mexico 87545; tel. 505/667-1447; fax 505/665-4408.

NASA Discovery Program Workshop, Summary Report (64 pp., \$10), from a conference last November 16-20 at the San Juan Capistrano Research Institute on Discovery-class missions, NASA's designation for low-cost, fast-moving alternatives to the multi-billion-dollar mega-projects that are wrecking the space agency's budget and political credibility. The Discovery missions, strongly backed by NASA Administrator Daniel Goldin, are capped at \$150 million and three years for development. With 246 persons in attendance, 73 mission concepts were evaluated. (NASA later announced the selection of 11 for further study.)

The report states, "Following the admonition of Administrator Goldin that 'we should not aim too low,' the workshop results suggest that a Discovery program involving multiple annual launches would, indeed, be feasible."

Order from: San Juan Capistrano Research Institute, 31872 Camino Capistrano, San Juan Capistrano, California 92675; (no telephone orders). *(Continued on Page 7)*

